Massachusetts Electric
A National Grid Company

Amy G. Rabinowitz
Assistant General Counsel

July 14, 2005

Mary L. Cottrell, Secretary
Department of Telecommunications and Energy
One South Station
Boston, MA 02110

Re: D.T.E. 04-116

Dear Secretary Cottrell:

On behalf of Massachusetts Electric Company and Nantucket Electric Company, I am enclosing our responses to Information Requests DTE-LDC 4-1 through 4-6 and DTE A 2-1.

Thank you very much for your time and attention to this matter.

Very truly yours,

Amy G. Rabinowitz

Amy G. Rabinowitz

25 Research Drive
Westborough, MA 01582-0099
508.389.2975 Fax: 508.389.2463
amy.rabinowitz@us.ngrid.com

DTE-LDC 4-1

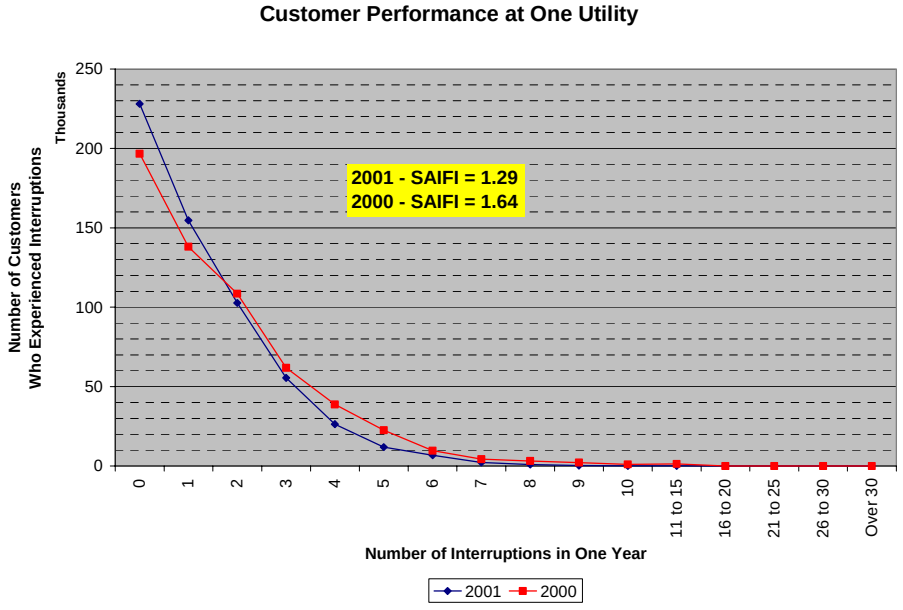
Request:

Do the current system wide SQ measures permit pockets of poor performance in terms of SAIDI, SAIFI, and CAIDI? If so, explain how such poor performing pockets can be identified, reduced, and eliminated.

Response:

Service Quality measures do not "permit" poor performance. These measures, which are averages, are derived from the distribution of the pertinent interruption parameters, with some values being high and some low. System wide averages will not provide performance information for specific operating areas within the service territory.

To better understand this limitation of service quality indices, Figure 1 below was prepared for a fictitious utility. In 2000 SAIFI was 1.64 and in 2001 SAIFI was.1.29. The X-axis (bottom) shows the number of events while the Y-Axis (left) shows the number of customers experiencing that specific number of events. Using this curve, the distribution of the pertinent interruption parameters used to derive SAIFI is very clear to discern. Instead of knowing that the "average" customer in 2001 had 1.29 service interruptions, this curve shows that 228,055 customers had no interruptions at all while 154,707 customers had one interruption and so on.



The data collection process required to present the reliability data in the manner shown above is not commonly available within the industry and it would be difficult for

most utilities to determine the number of interruption events experienced by each individual customer as shown in Figure 1. However, as more sophisticated information systems are adopted, information on a customer basis will be available. It is quite likely that a small utility would be unable to create the information shown above. Even larger utilities may not be able to do this analysis. Mass. Electric at the present time can provide this information on a transformer basis, but not on an individual customer basis. Mass. Electric is currently working to implement a new outage management system ("OMS"), PowerOn, that will allow calculation of $CEMI_n$ (see below). This new system will not be in place until 2009.

IEEE 1366-2003 presents an index, $CEMI_n$, that addresses the distribution of the pertinent interruption parameter. This index is the ratio of individual customers experiencing n or more sustained interruptions to the total number of customers served. Mathematically, this equation is given as:

$$CEMI_n = \frac{\text{Total Number of Customers that experienced more than n sustained interruptions}}{\text{Total Number of Customers Served}}$$

Or

$$CEMI_n = \frac{CN_{(k >= n)}}{N_T}$$

Where:
$CN_{(k>n)}$ = Total Number of Customers who have Experienced n or more Sustained Interruptions, during the Reporting Period.
N_T = Total Number of Customers Served

Customers with annual interruptions higher than some set value can be identified in this manner. The events that impact reliability metrics are random and vary over time. Therefore, to use $CEMI_n$, it would be prudent to review this information for a 3 to 5 year period to determine average values of $CEMI_n$ that could be used as a target threshold. A metric utilizing $CEMI_n$ could then be developed that would require a fixed percent of all customers to be below a defined $CEMI_n$ value. For example, 90% of all customers would be required to be below $CEMI_{12}$. This needs to be done in conjunction with IEEE 1366-2003 major event day segmentation of reliability interruption events. Otherwise, one time storm events will skew the metric.

Prepared by or under the supervision of: Cheryl A. Warren

DTE-LDC 4-2

Request:

Is it feasible for the current SQ measures SAIDI, SAIFI, and CAIDI to be at circuit level instead of at a system-wide level? Will this capture pockets of poor performance? If so, please describe:

(a) how can such change be undertaken; and
(b) what would be the advantage and disadvantage to the customers and to the distribution companies?

Response:

The choice of correct performance metrics is critical, because utilities will allocate their finite resources to meet them. Accordingly, metrics for reliability should be structured to encourage reliable service across a company's service territory in the most cost effective way. While it is technically feasible to report SAIDI, SAIFI, and CAIDI[1] at the feeder level, it is not appropriate, as presented in the discussion below. In addition, significant resources would be required to meet the reporting requirement itself, and would therefore be unavailable for underlying system improvements. Use of individual performance metrics at various levels of the system preclude the efficient and effective development of appropriate system wide reliability remediation plans.

The limitations of economic system design and the randomness of reliability events cause very large variability in the reliability results of any specific feeder. When reliability metrics are applied to a large customer base, over a large service territory, the multiplicity of feeder designs and the randomness of the events moderate the average values obtained such that they can be relied upon to present a reasonable indication of how a company is performing. This is not so when applied to individual feeders.

When system based reliability indices are utilized, companies will tend to apply improvements on a broad, system-wide basis to lower the average value, with greater emphasis placed on improving those areas where improvements produce the greatest benefit to the system metric. These areas tend to be those that will improve the reliability performance for the most customers for the dollars spent. Areas, or feeders that are performing better than the average, will tend to be maintained at that level, since they beneficially contribute to the system average.

When reliability indices are individually applied to a multitude of system components, such as feeders, the tendency is to move all individual components to an average value. With finite resources, there is a large incentive to improve the worst

[1] As described in the Company's response to DTE-LDC 3-4, the Company recommends against the use of CAIDI as a metric altogether.

performing component, but also an incentive to allow the best performing components to deteriorate, as long as they do not fall below the system average.

Feeders, or their branches, by their very nature are dynamic entities. Their configuration and source of supply change, sometimes frequently. Therefore, using them as an indicator would be problematic. It would take great effort to track the interruption events through the various configurations the feeder may take. In addition, inappropriate service quality assumptions would arise from index variability due to reconfiguration. For example, if a feeder served 600 customers over 5 miles from January through May and then was reconfigured to serve 2000 customers over 20 miles from June through December, the inevitable increase in the index values might lead to the inappropriate allocation of resources to address an apparent problem that might be completely due to reconfiguration. Maintaining a database of feeder reconfigurations, and the appropriate interruption data associated with each and every interruption for each and every configuration on Mass. Electric's 1,100 feeders, would require substantial changes to the systems used to capture and process reliability data. Field operations would require different, more time-consuming procedures to address the need for more comprehensive feeder configuration and customer interruption data. This intensive data collection effort would require resources that could otherwise be used for underlying reliability projects.

The reliability experienced by individual customers will vary, in both location and time, due to the limitations of economic system design and the randomness of reliability events. As such, half the customers over any specific timeframe will have their individual reliability index above the average of the company, with a percentage of these being above one standard deviation over the average and a smaller percentage above two standard deviations over. This will be so for companies with overall excellent system reliability as well as for those with less than acceptable system reliability. Since customers would not accept the cost of unlimited reliability improvement, and allowing reliability to deteriorate in one area to focus on improving it in another is unacceptable, this condition will always exist. Therefore, for reasons noted above, the Company recommends the continuation of system-wide reliability service quality measures, with specific reliability problem areas addressed on a case-by-case basis.

Prepared by or under the supervision of: Cheryl A. Warren

DTE-LDC 4-3

Request:

If the answer to DTE LDC 4-2 is no, please provide an alternative to DTE-LDC 4-2 that captures poorly performing circuits.

Response:

While this question is asking for an alternative SQ measure, the Company believes that SQ measurements are most valuable for assessing the system as a whole, and not individual feeders, as discussed in response to DTE-LDC 4-2. Therefore Mass. Electric does not recommend an alternative feeder based SQ measure. However, the Company does recognize the DTE's interest in wanting information about poor performing circuits, and has been reporting it using the current methodology. The current approach used by the Department is adequate for identifying poor performing circuits. The Company recommends that if the Department continues to require information on poor performing circuits that it continue to use the current mechanism.

Prepared by or under the supervision of: Cheryl A. Warren

DTE-LDC 4-4

Request:

Please refer to Attachment A: Problem Circuit Remediation Index (PCRI).

(a) Would this proposed penalty measure improve the performance of problem circuits?

(b) What improvements could be made to the proposed program to enhance it?

(c) Is there an alternative method of improving performance of poorly performing circuits?

(d) The Department has allocated 45 percent of the potential penalty pool to SAIDI and SAIFI in Docket 99-84. If the Department was to approve the PCRI program, what percentage of the potential penalty pool should be allocated to PCRI?

Response:

As described in response to DTE-LDC 4-2 and 4-3, the Company recommends against a reliability metric at the feeder level. The Company recommends that no percentage of the potential penalty pool be allocated to PCRI.

Prepared by or under the supervision of: Cheryl A. Warren

DTE-LDC 4-5

Request:

Please refer to Attachment B: Major Safety Incident Index (MSII).

(a) Is it feasible for the Department to substitute this new MSII penalty measure for its existing Lost Work Time Accident measure for Electric Distribution Companies?

(b) What improvements could be made to the proposed program?

(c) If the Department were to approve the MSII penalty measure, what percentage of the potential penalty pool should be allocated to the MSII measure?

Response:

(a) While it might be feasible for the Department to substitute this new MSII penalty measure for all or part of its existing Lost Work Time Accident measure for electric distribution companies, it would not be advisable for a number of reasons:

(1) This measure seems to cast an overly wide net if it is primarily intended to track stray voltage and manhole cover incidents. A Major Safety Incident (MSI) would include, but not be limited to: (i) all work-related employee injuries, whether or not they result in lost time, and whether they are office or field related; (ii) public electrical contacts, plus (iii) automobile accidents involving company vehicles; (iv) pole hits, and (v) any other incident, involving a property damage claim over $5,000. Thus, it will likely be the case that the number of reportable stray voltage and manhole cover incidents represents a relatively small percentage of total MSIs. Furthermore, with the proposed broad definition of MSIs, it would be somewhat challenging to capture all such incidents and therefore it may be preferable to narrow the focus of this measure to the most serious incidents by increasing the severity of the tracked injuries (to ones that lead to death or hospitalization) and property damage claims (to those over $20,000).

(2) A fundamental feature of a well designed service quality plan is that performance measures consist of matters that can be controlled or managed by the Company. Unfortunately, the MSI definition mixes a number of incidents that are generally beyond Mass. Electric's control (public contacts, pole hits and property damage claims) with those incidents over which Mass. Electric has at least some control (employee injuries and employee automobile accidents). Penalizing the Company for incidents that are generally beyond the Company's control is not appropriate.

(3) The definition of "incidents occurring in the conduct of the day to day business operations that lead to" injury or damage is problematic, since Mass. Electric has many cases in which allegations are made years after the incident that the Company was at fault and for which Mass. Electric does not agree that anything it did caused the accident. For example, where a drunken motorcycle driver hits a pole, Mass. Electric may get sued years later on the ground that the Company placed the pole too close to the road. Mass. Electric may not even know about the pole hit at the time.

(4) Mass. Electric has a robust safety management program, which is designed to capture, process, and utilize information about safety incidents, near-misses, and unsafe conditions, in order to reduce and eliminate accidents. With this system, Mass. Electric has been able to significantly improve its safety record. It requires commitment of significant resources, including training of all employees. In essence, the reporting system envisioned by Attachment B would require the Company to create another overlapping information reporting system, with the attendant possibility of confusion, and without concurrent benefits.

(5) With respect to the reporting of employee accidents, the reporting system overlaps information already required to be reported to OSHA, and goes further than OSHA requirements.

(6) Many accidents that give rise to serious injury or property damage are the subject of litigation, in which the Company contests causation and/or liability. Reporting an MSI could compromise the Company's defenses in any resulting litigation. It would be necessary for any information provided to the Department under this section be provided on a confidential basis.

(b) Mass. Electric believes it would be preferable to continue to maintain the current Lost Work Time Accident rate performance measure contained in the Department's current guidelines.

(c) As stated above, Mass. Electric would encourage the Department to maintain the current Lost Work Time rate performance measure, along with its current weighting.

In any event, Mass. Electric understands that the intent of "Attachment B" would be to develop an annual average quarterly Major Safety Incident Index benchmark (i.e., the quarterly number of Major Safety Incidents would be averaged over a period of time: one year, two years . . . up to five years). The Company also understands that actual annual average quarterly performance would be measured against this benchmark. Mass. Electric does not believe it would be appropriate to compare actual quarterly MSII performance against an annual average quarterly MSII benchmark because short-term

performance is much more susceptible to wide performance variations than annual (or annual average quarterly) performance. Furthermore, any annual average quarterly MSII benchmark should not be utilized unless it is based on a minimum three, and preferably five, years' (or twenty quarters') data, consistent with provisions contained in the Department's current SQ guidelines.

As previously noted in the Company's response to DTE-LDC 3-1, the Department has hired Navigant Consulting to review the significant efforts that Mass. Electric and the other Massachusetts utilities are taking to minimize elevated equipment voltage and develop recommendations for further action. In addition, the Department has hired Siemens PTI to review the efforts that Mass. Electric and the other Massachusetts utilities are taking to minimize manhole cover ejection incidents and develop appropriate recommendations. Mass. Electric believes that these ongoing efforts, outside of a review of service quality guidelines, are appropriate and should help both the Department and the utilities to address these issues directly.

Prepared by or under the supervision of: Robert H. McLaren

DTE-LDC 4-6

Request:

Do the Companies have any alternative penalty measures that would accomplish the goals of PCRI and MSII? Describe.

Response:

No.

Prepared by or under the supervision of: Robert H. McLaren

DTE-A 2-1

Request:

Would it be appropriate in the future for companies to enter into settlements or other agreements which would permit parties to deviate from the established SQ Guidelines? Explain.

Response:

Mass. Electric believes that it may be appropriate to allow companies to enter into settlements that vary from established Service Quality Guidelines. For example, a party may propose that a utility focus on a specific area for service quality improvement that would otherwise exceed the service quality standard or not be directly covered by the current regulations. This kind of flexibility often provides the data and experience that is used to expand or improve future regulations. The Department should not rule settlements out simply because they affect or expand the current regulatory approach. Rather, the Department should evaluate these settlements, as it would any other, and approve them if they are reasonable, in the public interest, and can be implemented in a manner that is consistent with the Department's policy objectives.

In general, any settlement should include reporting of the full list of standard performance metrics calculated consistent with the Department's established SQ Guidelines. This would ensure that the Department has a complete set of performance metrics for all jurisdictional utilities, thus allowing comparative performance metrics. Any enhanced performance measures incorporated in a settlement could also be compared and tracked versus the company's performance under the standard measures included in the Guidelines.

Prepared by or under the supervision of: Robert H. McLaren